

Application No. 09/994,495
Amendment dated November 11, 2003
Reply to Office Action of August 11, 2003

REMARKS/ARGUMENTS

Reconsideration and allowance are respectfully requested for claims 1-19, 48, 49, and 50.

Applicants wish to thank the Examiner for the courtesies extended to Applicants' representative during the telephonic interviews of June 26, 2003, and August 12, 2003. Applicants also appreciate the Examiner's consideration of the Information Disclosure Statement filed on January 30, 2003, and re-submitted on July 3, 2003, and the restart of the period for reply, now to begin from the August 11, 2003, mailing date of the Supplemental Office Action.

In the Office Action, claim 4 was rejected under 35 U.S.C. 112, second paragraph. This rejection is respectfully traversed. Claim 4 has been amended to overcome the rejection under 35 U.S.C. § 112, second paragraph. More specifically, claim 4 has been amended to be dependent from claim 3. Accordingly, it is respectfully requested that the rejection of claim 3 under 35 U.S.C. § 112, second paragraph, be withdrawn.

In the Office Action, claims 1, 6, 7, and 13-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,282 (Moulton) in view of U.S. Patent No. 3,295,686 (Krueger). The Examiner asserts that it would have been obvious to provide the bottom or second ends of the purification devices of Moulton with removable caps as suggested by Krueger for the known and expected result of preventing the purification devices from becoming contaminated prior to use. For the reasons set forth below, this rejection is respectfully traversed.

Moulton describes a filtration apparatus 10 designed for use in conjunction with a centrifuge to induce filtration. As shown in Fig. 1, the apparatus 10 includes an extraction well plate 12, a filtration well plate 14, and a lid 16. The extraction well plate 12 forms extraction wells 20 that receive material 24 extracted from filtration wells 32 formed by filtration well plate 14. Each filtration well 32 has a

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distal channel 44 having a filter 48 press-fitted therein. Moulton discloses that each distal channel 44 is open at its bottom, so that upon filtration, extraction materials drawn through filter 48 exit distal channel 44 and fall into corresponding extraction well 20.

As acknowledged in the Office Action, Moulton fails to disclose the use of removable caps adapted to seal a second opening of a plurality of purification devices. The Office Action relies upon Krueger to allegedly overcome this shortcoming of Moulton with regard to independent claim 1. However, it is respectfully submitted that there is no suggestion or motivation to modify the apparatus of Moulton to seal or cap the distal channels 44. In particular, Moulton discloses that the filter 48 of each filtration well 32 is hydrophobic, and has a sufficiently small pore size such that surface tension prevents the passage of fluid sample 50 into the filter 48 due to gravity (*see*, col. 4, lines 25-30 of Moulton). Moreover, the side walls 34 of the filtration well plate 14 of Moulton extend vertically lower than the distal ends of the walls 46 of the distal channels 44 such that the distal channels 44 are spaced from a surface 22 of the filtration well plate 14 and would be spaced from any flat surface on which the filtration well plate 14 might be placed. During operation, Moulton describes that the filtration well plate 14 is fitted atop extraction well plate 12 by way of engaging flanges 36. After a fluid sample 50 is introduced into each filtration well 32, lid 16 is fitted over filtration well plate 14, sealing each filtration well 32. The entire apparatus is then centrifuged (*see*, col. 4, lines 21-39 of Moulton). As a result, in Moulton, contamination at the ends of the distal channels 44 is avoided at least before and during use.

Moreover, Moulton fails to teach or suggest in any way, (1) providing caps on the respective ends of the distal channels 44, (2) any sealing whatsoever of the filtration well plate 14, (3) storing the filtration well plate 14, or (4) archiving the filtration well plate 14.

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Krueger discloses a filter unit including a snap-on top or cap 11, and a bottom cap 33. However, Krueger does not relate to a system that includes a plurality of devices, let alone a plurality of devices wherein each device has a removable cap for sealing a respective end thereof, as set forth in independent claim 1. It is respectfully submitted that even if the teachings of Moulton and Krueger were somehow combined, nothing suggests that a plurality of removable caps, each sealing a respective end opening of a device as presently claimed, would result. It would require nothing less than hindsight consideration of the claimed invention to render the claimed invention obvious in view of the combined teachings of Moulton and Krueger.

Accordingly, it is respectfully submitted that independent claim 1, and claims 6, 7, and 13-16 depending therefrom, are patentability distinguishable over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

In the Office Action, claims 1, 2, 6, 7, 10, 11, and 13-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,846,493 (Bankier et al.) in view of Krueger and U.S. Patent No. 5,741,463 (Sanadi). The Examiner asserts that it would have been obvious to provide the bottom or second end of the purification devices of Bankier et al. with removable caps as suggested by Krueger for the known and expected result of preventing the purification devices from being contaminated prior to use. Further, the Examiner asserts that it would have been obvious in view of Sanadi to provide a variety of means known in the art for sealing an array of openings. This rejection is respectfully traversed.

Bankier et al. discloses a system and method for filtering a sample, such as DNA. As shown in Fig. 1, the system 1 includes a plurality of columns 10 or a set 50 of columns 10, each column 10 including an opening 12 at its top end. The system 1 includes a manifold 14 formed by a base 16 and a

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cover 18. A pump 24 is arranged to apply a vacuum to an interior 26 of the manifold 14 to thereby draw and filter solutions from each of the columns 10. As shown in Fig. 5, a filter 38 is arranged in each of the columns 10, above a tip 42 including an opening 44.

As acknowledged in the Office Action, Bankier et al. fails to disclose a sealing device having a surface to individually seal each first opening of the columns 10, and a removable cap adapted to seal each second opening of the columns 10. The Office Action relies upon the disclosures of Krueger and Sanadi to allegedly overcome the shortcomings of Bankier et al. with regard to independent claim 1.

Krueger discloses a filter unit including a snap-on top or cap 11, and a bottom cap 33. Krueger fails to disclose or suggest in any way a system including a plurality of filters with caps on one end and all sealed at their opposite ends with a sealing device. Sanadi discloses an assembly 18 for handling multiple samples including a tube tray 3 over which a resilient gasket 2 is placed to seal openings 11 of a plurality of tubes 4. Sanadi fails to disclose or suggest a plurality of removable caps and has nothing to do with filtration. Instead Sanadi relates to a multi-well sample containment tray. However, it is respectfully submitted that there is no suggestion or motivation in any of the cited references for modifying the system and method of Bankier et al. to incorporate the features of Krueger or Sanadi or to provide seals at the openings 12 or 44 of the columns 10. In particular, **Bankier et al. fails to teach or suggest in any way: (1) sealing the openings 12 of columns 10, (2) sealing the tips 42 of columns 10, (3) sealing any portion whatsoever of the set 50 of columns 10, (4) storing the set 50, or (5) archiving the set 50.** Bankier et al. fails to teach or suggest any use for the columns beyond filtration and it is respectfully submitted that one of ordinary skill in the art would not recognize any need to cap any of the ends of the columns 10.

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Accordingly, it is respectfully submitted that the motivation to combine the disclosure of Bankier with that of Krueger and Sanadi cannot be gleaned from the state of the art, but instead only from impermissible hindsight consideration based upon the present application.

Moreover, even if the openings 12 and 44 of the columns 10 of Bankier et al. were sealed, nothing in Bankier et al., Krueger, or Sanadi suggests providing a system with a plurality of removable caps, for respectively sealing one end of each column, and a sealing device for sealing all the opposite ends of the columns.

It is respectfully submitted that independent claim 1, and claims 2, 6, 7, 10, 11, and 13-19 depending therefrom, are patentably distinguishable over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

In the Office Action, claims 3-5, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bankier et al. in view of Krueger and Sanadi, and further in view of U.S. Patent No. 5,112,574 (Horton). As indicated in the Office Action at page 8, paragraph 11, Horton has been relied upon to allegedly disclose that it is known in the art to use only a single device in an array of devices, (*see*, column 1, lines 52-60 of Horton), and the use of individual caps to seal the openings in an array (*see*, column 2, lines 18-31 of Horton). Thus, Horton does not otherwise overcome the deficiencies of Bankier et al., Krueger, and Sanadi, as applied against independent claim 1, and as set forth and discussed above. Because claims 3-5, 17, and 18 depend from independent claim 1, claims 3-5, 17, and 18 are also patentably distinguishable over the cited references for the reasons set forth above. Reconsideration and withdrawal of the rejection are respectfully requested.

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In the Office Action, claims 8 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bankier et al. in view of Krueger and Sanadi, and further in view of U.S. Patent No. 6,402,950 B1 (Nix et al.). As indicated in the Office Action, at pages 8 and 9, paragraph 12, Nix et al. has been relied upon to allegedly disclose that it is known in the art to employ an adhesive film or foil to seal the openings of an array of openings in a purification device (*see*, column 8, lines 63-68 of Nix et al.). Thus, Nix et al. does not otherwise overcome the deficiencies of Bankier et al., Krueger, and Sanadi, as applied against independent claim 1. Because claims 8 and 9 depend from independent claim 1, claims 8 and 9 are also patentably distinguishable over the cited references for the reasons set forth above. Reconsideration and withdrawal of the rejection are respectfully requested.

In the Office Action, claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the five-way combination of Bankier et al., in view of Krueger and Sanadi, and further in view of U.S. Patent No. 5,955,271 (Leying et al.) and U.S. Patent No. 5,124,041 (Sheer et al.). As indicated in the Office Action at pages 9 and 10, paragraph 13, Leying et al. has been relied upon to disclose that it is well known in the art to purify and amplify nucleic acid in the same vessel (*see* Example 1 of Leying et al.). Sheer et al. has been relied upon to disclose that it is known in the art to perform PCR *in situ* on a purification media of a device (*see*, column 8, lines 46-47 of Sheer et al.). Thus, neither Leying et al. nor Sheer et al. otherwise overcome the deficiencies of Bankier et al., Krueger, and Sanadi, as applied against independent claim 1. Since claim 12 depends from independent claim 1, claim 12 is also patentably distinguishable over the cited references for the reasons set forth above. Reconsideration and withdrawal of the rejection are respectfully requested.

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In the Office Action, claims 48-50 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,141,719 (Fernwood et al.) in view of Krueger. While page 10, paragraph 14, of the Office Action indicates that claims 48-50 have been rejected in view of the combination of Fernwood et al. and Krueger, it has been noted that the body of the rejection also addresses the disclosure of U.S. Patent No. 5,741,463 (Sanadi), in combination with the disclosures of Fernwood et al. and Krueger. Therefore, claims 48-50 have been treated as if they have been rejected in view of the combination of Fernwood et al., Krueger, and Sanadi.

The Examiner asserts that it would have been obvious to provide the bottom or second ends of the purification devices of Fernwood et al. with removable caps as suggested by Krueger for the known and expected result of preventing the purification devices from becoming contaminated prior to being used. The Examiner asserts that it would have been obvious to provide a sealing device as suggested by Sanadi for the known and expected result of providing a means for sealing an array of the openings. For the reasons set forth below, this rejection is respectfully traversed.

Fernwood et al. discloses a filtration plate assembly including an upper plate 11 that contains an array of apertures 12, and a porous membrane sheet 13 positioned below the apertures 12, see Fig. 4. A support plate 16 containing apertures 18 is arranged below the upper plate 11. According to col. 3, lines 23-29 of Fernwood et al., alternatives to the use of the membrane sheet 13, include the use of individual membrane disks securable or secured to the bottom of each aperture 12, or a nonporous film or sheet containing porous circular regions aligned with each of the apertures 12.

However, Fernwood et al. does not disclose or suggest an analytical system including a combination of features including a plate having a plurality of through-holes and a plurality of species-immobilizing filters each disposed within a respective through-hole, as set forth in independent claim

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48. Moreover, Fernwood et al. does not disclose or suggest a first and a second sealing device sealing a first and a second end opening of each through-hole, as also set forth in independent claim 48.

Instead of filters disposed within respective through-holes, Fernwood et al. discloses a membrane sheet 13, individual membrane disks, or a nonporous film or sheet with nonporous circular regions, arranged below the apertures, or secured to the bottom of each aperture 12.

Krueger discloses a filter unit including a snap-on top or cap 11, and a bottom cap 33. Sanadi discloses an assembly 18 for handling multiple samples including a tube tray 3 over which a resilient gasket 2 is arranged to seal openings 11 of a plurality of tubes 4. Further distinctions between the claimed features and the features of Krueger and Sanadi are discussed above. Therefore, neither Krueger nor Sanadi overcome the noted shortcomings of Fernwood et al. in relation to independent claim 48. Accordingly, there is nothing in Fernwood et al., Krueger, or Sanadi that suggests the claimed combination of features, and it is respectfully submitted that even if one of ordinary skill in the art might somehow combine the disclosures of Fernwood et al, Krueger, and Sanadi, the resulting hypothetical structure would still be substantially different than what is claimed in independent claim 48.

In view of the differences between the claimed invention and the cited references, it is respectfully submitted that independent claim 48, and claims 49 and 50 depending therefrom, are patentably distinguishable over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

For at least the reasons set forth above, Applicants respectfully submit that claims 1-19, and 48-50, are in condition for allowance. Applicants respectfully request favorable reconsideration, withdrawal of the rejections, and prompt action in the form of a Notice of Allowance.

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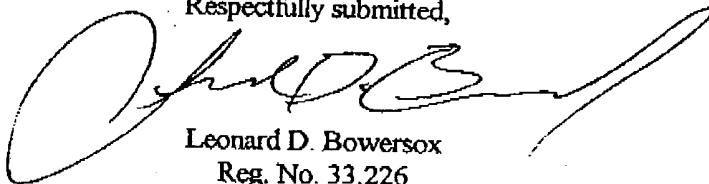
CONCLUSION

In view of the foregoing remarks, Applicants respectfully request fair and prompt reconsideration of the present application and a timely allowance of the pending claims.

Should the Examiner deem that any further action by Applicants or Applicants' undersigned representative is desirable and/or necessary, the Examiner is invited to telephone the undersigned at the number set forth below.

If there are any other fees due in connection with the filing of this response, please charge the fees to deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



Leonard D. Bowersox
Reg. No. 33,226

LDB:PGK:sks
KILYK & BOWERSOX, P.L.L.C.
3603-E Chain Bridge Road
Fairfax, Virginia 22030
Tel.: (703) 385-9688
Fax.: (703) 385-9719